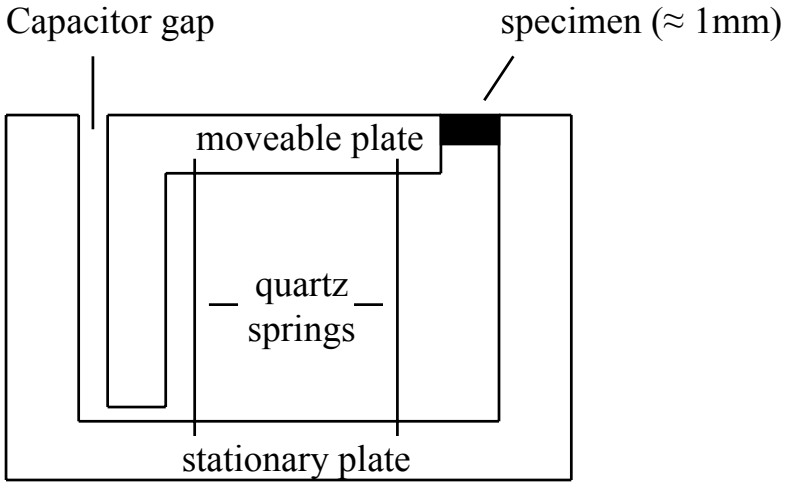
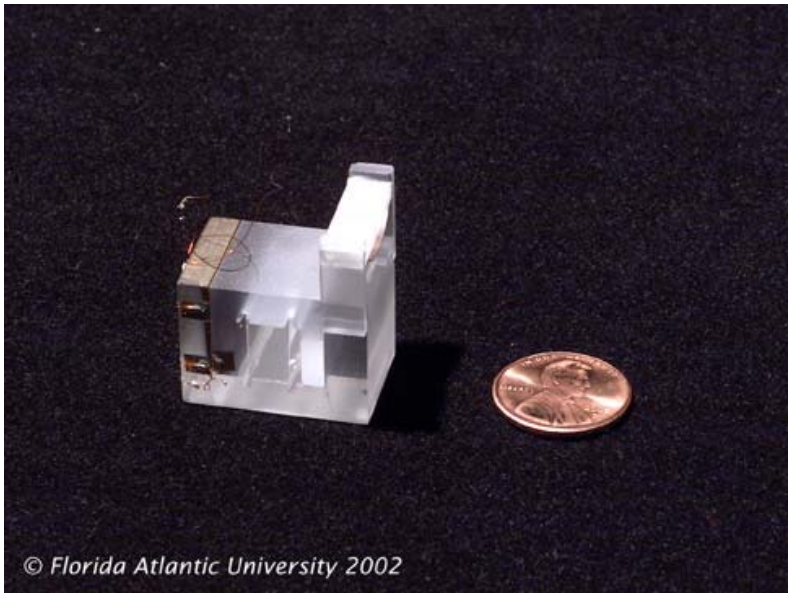
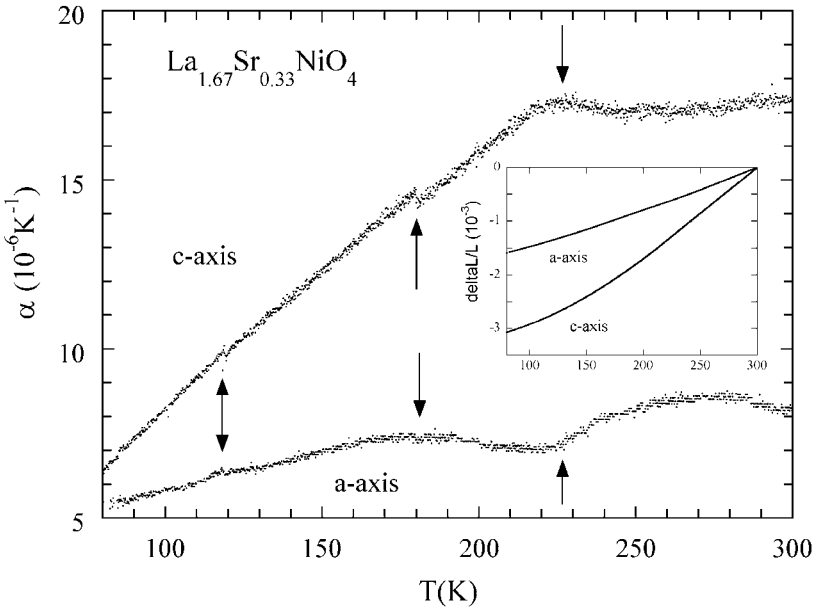
CAREER: Synthesis and investigation of novel condensed matter compounds and development of a high-resolution capacitive dilatometer.

John Neumeier, Florida Atlantic University, DMR-9982834





The quartz thermal expansion cell developed and constructed at Florida Atlantic University.



- Highly sensitive thermal expansion measurements can reveal unique information regarding the coupling of magnetic and electronic phase transitions with the atoms making up the condensed matter system.

- In this case, a system closely associated with high temperature superconductors is the subject of study. the crystal was approximately 1.2 mm long.

- Two phase transitions are revealed. At 226 K short-range magnetic and electronic ordering occurs. Below 180 K long-range magnetic order sets in.

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Awards

- Dr. Neumeier was named Distinguished Teacher of the Year at Florida Atlantic University in 2002.

Human Resource Development

- 4 graduate students (2 masters, 2 Ph.D.) in 2002.
- Guoqing Wu will begin postdoctoral appointment at UCLA this fall with Dr. W. Gilbert Clark.
- Juscelino Leao (masters) will become a staff member at the NIST Neutron Source in August.

Outreach

- Provided demonstrations for children at the J. C. Mitchell Elementary School. The demonstrations are adapted for Kindergarten students. In this case, the subject was Bicycle Riding and Angular Momentum. Three classes were visited this year (78 students total).